UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,313	09/03/2003	Robert M. Guidash	86321PCW	4417

7590   09/04/2008

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ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
09/04/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _09 May 2008_.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-6,8-14 and 16-20_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1-6,8-14,16-20_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed on 05/09/2008 have been fully considered but they are not persuasive.

In re pages 7-8, Applicant argues that Morris does not teaches the output signal values have signals that are generated from pixels within at least two physically separate rows within the array.

In response, regarding claims 8 and 17, the Applicant recited claims 8 and 17 with limitation "wherein the output signal values have signals that are generated from pixels within at least two physically separate rows within the array." The Examiner considers that claims 8 and 17 as recited still do not distinguish from Morris et al. Morris et al. discloses row decoder 121 provides output signal to select rows of pixel sensing unit 118 for reading out signal value, figure 5, column 7, lines 9-31. Morris et al. also discloses the decoder 121 retrieves the stored indications of the intensities from pixel sensing units 118 by selectively selecting rows of the pixel sensing units 118, figure 5, column 7, lines 9 - 31. Noted that the signal values that are generated from the array of pixel sensing units 118 (plurality of groups of 2x2 pixels 113, each group of 2x2 pixel comprises two rows), which corresponds to the output signal values have signals that are generated from pixels within at least two physically separate rows within the array, are transferred to output interface 128, figure 5, column 7, lines 9-31.

In re pages 7-8, Applicant argues that Morris (figure 5) does not show or describe having a signal line routed to pixels in two adjacent rows.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *having a signal line routed to pixels in two adjacent rows*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, regarding claims 8 and 17, the Applicant recited claims 8 and 17 with limitation "wherein the output signal values have signals that are generated from pixels within at least two physically separate rows within the array." The Examiner considers that claims 8 and 17 as recited still do not distinguish from Morris et al. as discussed above.

In re pages 9-10, Applicant argues that Applicant respectfully submits there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Morris in view of Abe or to combine Morris with Abe.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Morris et al. discloses an image sensor comprises an image sensor (digital imager 140, figure 5), a plurality of pixels (an array of pixel sensing unit 11, figure 5), a color filter pattern (one group of pixels is associated with red color or green color, figure 5, column 3, lines 30-52); and a mechanism for controlling integration time of the different sets of kernels according to their spatial location, wherein the integration time is different for each set of the kernels (the integration interval of each group of pixels 113a, 113b, 113c, 113d are different, column 3, lines 5-30).

Morris et al. only fails to disclose the plurality of color filter kernels having the same colors in a predetermined arrangement. However, Abe teaches this feature. Abe teaches a digital camera 10 in which the color filter 13 is divided into a 2x2 pixel matrix M1, each pixel matrix M1 has the same plurality of colors R, G, B (figure 2, column 3, lines 51-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Morris et al. by the teaching of Abe in order to reduce the chromatic blur which occurs in a reproduced image because of the interpolating process (column 1, lines 40-43).

In re pages 9-10, Applicant argues that Applicant's claimed invention is directed at extending the dynamic range of an image sensor; reducing chromatic that occurs in reproduced images due to the color interpolation process does not extend the dynamic range of an image sensor; extending the dynamic range of image sensor does not reduce chromatic blur.

In response, it should be noted that claim 1 does not require *"extending the dynamic range of an image sensor,"* claim 1 only recite an image sensor, which comprises a plurality of

pixels, a color filter pattern and a mechanism for controlling integration time of the different sets

of kernels; Morris et al. discloses all these limitations, except the feature "the plurality of color

filter kernels having the same colors in a predetermined arrangement," which is disclosed by

Abe. Therefore, the combination of Morris et al. and Abe would render an image sensor, which

is able to reduce the chromatic blur which occurs in a reproduced image because of the

interpolating process (Abe, column 1, lines 40-43). This resultant combination of Morris et al.

and Abe would have been predictable to one of ordinary skill in the art.

In re page 11, Applicant argues that the combination of Morris and Abe does not teach or

suggest "a color filter pattern spanning at least a portion of the pixels, wherein the color filter

pattern forms a plurality of color filter kernels having the same colors in a predetermined

arrangement wherein the kernels are arranged in at least two different uniformly distributed sets"

and "a mechanism for controlling integration time of the different sets of kernels according to

their spatial location, wherein the integration time is different for each set of the kernels."

In response, regarding claim 1, the Examiner considers that Morris et al. and Abe do

disclose these features.

Morris et al. discloses a color filter pattern (one group of pixels is associated with red

color or green color, figure 5, column 3, lines 30-52) spanning at least a portion of the pixels,

wherein the color filter pattern forms a plurality of color filter kernels (group of four pixels 113a,

113b, 113c, 113d, one group has red pixel color, another group has green pixel color, figure 5,

column 3, lines 5-40) wherein the kernels are arranged in at least two different uniformly

distributed sets (each group of pixels includes 2x2 pixels, figure 5, column 3, lines 5-40); and a

mechanism for controlling integration time of the different sets of kernels according to their

spatial location, wherein the integration time is different for each set of the kernels (the

integration interval of each group of pixels 113a, 113b, 113c, 113d are different, column 3, lines

5-30).

Morris et al. does not disclose the plurality of color filter kernels having the same colors

in a predetermined arrangement. However, Abe teaches this feature. Abe teaches a digital

camera 10 in which the color filter 13 is divided into a 2x2 pixel matrix M1, each pixel matrix

M1 has the same plurality of colors R, G, B (figure 2, column 3, lines 51-60).

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

3.   Claims 8, 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Morris et al.

(US 6,665,010).

Regarding claims 8, 17, Morris et al. discloses a camera (digital camera 12, figure 1,

column 1, lines 8-20) comprising:

an image sensor (digital imager 140, figure 5) comprising:

a plurality of pixels arranged in an array of rows and columns (an array of pixel sensing

unit 118, figure 5, column 3, lines 5-30);

a readout mechanism that provides a series of output signal values associated with a row

sync signal with a number of data signal values corresponding to a number of pixels in a row or

desired portion of a row (row decoder 121 provides output signal to select rows of pixel sensing

unit 118 for reading out signal value, figure 5, column 7, lines 9-31);

wherein the output signal values have signals that are generated from pixels within at

least two physically separate rows within the array (the signal values that are generated from the

array of pixel sensing units 118 are transferred to output interface 128, figure 5, column 7, lines

9-31). Noted that the signal values that are generated from the array of pixel sensing units 118

(plurality of groups of 2x2 pixels 113, each group of 2x2 pixel comprises two rows), which

corresponds to the output signal values have signals that are generated from pixels within at least

two physically separate rows within the array, are transferred to output interface 128, figure 5,

column 7, lines 9-31.

Regarding claim 18, Morris et al. discloses the data values are reconstructed in the

camera memory (the signals that are readout from imager 140 are stored in memory 263, figure

12, column 7, lines 37-49).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 1-6, 9-14, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Morris et al. (US 6,665,010) in view of Abe (US 6,747,698).

        Regarding claims 1, 9, Morris et al. discloses a camera (digital camera 12, figure 1,

column 1, lines 8-20) comprising:

        an image sensor (digital imager 140, figure 5) comprising:

        a plurality of pixels arranged in an array of rows and columns (an array of pixel sensing

unit 118, figure 5, column 3, lines 5-30);

        a color filter pattern (one group of pixels is associated with red color or green color,

figure 5, column 3, lines 30-52) spanning at least a portion of the pixels, wherein the color filter

pattern forms a plurality of color filter kernels (group of four pixels 113a, 113b, 113c, 113d, one

group has red pixel color, another group has green pixel color, figure 5, column 3, lines 5-40)

wherein the kernels are arranged in at least two different uniformly distributed sets (each group

of pixels includes 2x2 pixels, figure 5, column 3, lines 5-40); and

        (c) a mechanism for controlling integration time of the different sets of kernels according

to their spatial location, wherein the integration time is different for each set of the kernels (the

integration interval of each group of pixels 113a, 113b, 113c, 113d are different, column 3, lines

5-30).

Morris et al. fails to specifically disclose the plurality of color filter kernels having the same colors in a predetermined arrangement. However, Abe teaches a digital camera 10 in which the color filter 13 is divided into a 2x2 pixel matrix M1, each pixel matrix M1 has the same plurality of colors R, G, B (figure 2, column 3, lines 51-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Morris et al. by the teaching of Abe in order to reduce the chromatic blur which occurs in a reproduced image because of the interpolating process (column 1, lines 40-43).

Regarding claims 2, 10, Abe discloses wherein the color filter pattern is a Bayer color filter pattern (figure 2, column 1, lines 10-21, column 3, lines 51-60).

Regarding claims 3, 11, Morris et al. discloses wherein the color filter pattern is a 2x2 kernel (group of four pixels, figure 5, column 3, lines 5-30).

Regarding claims 4, 12, Morris et al. discloses wherein the integration time pattern is an alternating pattern of two lines at one integration time and adjacent two lines at a second integration time (the integration interval of each group of pixels 113a, 113b, 113c, 113d are different, column 3, lines 5-30).

Regarding claims 5, 13, Morris et al. discloses wherein the integration time for a first set of 2x2 pixels associated with a first kernel is at a first integration time, and the integration time

of adjacent 2x2 kernels in the same set of two lines at a second integration time (the integration

interval of each group of pixels 113a, 113b, 113c, 113d are different, column 3, lines 5-30).

Regarding claims 6, 14, Morris et al. discloses wherein the integration time pattern of

adjacent two lines groups is offset by two pixels (the integration interval of each group of pixels

113a, 113b, 113c, 113d are different, and each group is offset by two pixels 118, column 3, lines

5-30).

Regarding claim 16, Morris et al. discloses a mechanism that reads out at least a subset of

the plurality of pixels and uses the signal values obtained from the readout to determine the

integration times of the plurality of pixels (integration times for different groups of pixels are

independently controlled (column 3, lines 5-50).

Regarding claim 19, Morris et al. discloses a signal line for each row of pixels in the

array (a vertical signal line, which corresponds to *a signal line*, for each row of an array of pixel

sensing units 118, the vertical signal line transfers signal charges from pixel sensing unit 118 of

each row to the output interface 128, figure 5, column 7, lines 9-31), wherein each signal line is

routed to at least a portion of the pixels in two adjacent rows based on the arrangement of the

color filter kernels (noted that each group of four pixels 113a, 113b, 113c, 113d includes 2x2

pixels, i.e., two rows and two columns; one group has red pixel color, another group has green

pixel color, the four groups 113a, 113b, 113c, 113d create an arrangement of the color filter

kernels, figure 5, column 3, lines 5-40; each vertical signal line is routed to pixels in two adjacent

rows of pixel groups 113a, 113b, 113c, 113d).

Regarding claim 20, Morris et al. discloses a signal line for each row of pixels in the

array (a vertical signal line, which corresponds to *a signal line*, for each row of an array of pixel

sensing units 118, the vertical signal line transfers signal charges from pixel sensing unit 118 of

each row to the output interface 128, figure 5, column 7, lines 9-31), wherein each signal line is

routed to at least a portion of the pixels in two adjacent rows based on the arrangement of the

color filter kernels (noted that each group of four pixels 113a, 113b, 113c, 113d includes 2x2

pixels, i.e., two rows and two columns; one group has red pixel color, another group has green

pixel color, the four groups 113a, 113b, 113c, 113d create an arrangement of the color filter

kernels, figure 5, column 3, lines 5-40; each vertical signal line is routed to pixels in two adjacent

rows of pixel groups 113a, 113b, 113c, 113d).

Conclusion

6.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-

7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LTN
08/18/08   /LUONG T NGUYEN/
                                                                        Examiner, Art Unit 2622